ACCESSION NR: AP4038432

ture of CO and N_2. The square of the matrix element of the dipole moment of the electronic transition is determined from the measured integral absorption coefficients in the wavelength region 6,330--6,550 Å and is found to be 0.19 ± 0.09 atomic units. The ratio of the squares of the matrix elements for the violet and for the red bands is obtained from the integral intensities of the bands (1,0) of the red system and (0, 1) of the violet system of cyan, in the spectrum of an arc with carbon electrodes burning in air. Its value is found to be 1.9 ± 0.6. The value obtained for the square of the matrix element of the red dipole moment calculated from this ratio, and from the value obtained for the violet band earlier, agrees with the value obtained in the present work by measurements with the aid of a shock tube. The ratio does not agree with calculations by King and Swings (Astrophys. J. v. 101, 6, 1945) if allowance is made of the Franck-Condon factors. The reason for the discrepancy are discussed. "In conclusion the author is thankful to V. N. Kolesnikov for useful advice, A. T. Matachun and L. L. Sabsovich for solving the

Card   2/3

ACCESSION NR: AP4038432

gas dynamic problem on the M-20 computer, and G. I. Dronova for help
in the reduction of the experimental data. Orig. art. has: 4 formu-
las, 2 tables, and 1 figure.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk
SSSR (Physics Institute, Academy of Sciences,SSSR)

SUBMITTED: 29Dec63   DATE ACQ: 09Jun64   ENCL: 00

SUB CODE: OP, ME   NR REF SOV: 005   OTHER: 011

Card   3/3

ACCESSION NR: AP4017717   S/0294/63/001/003/0376/0385

AUTHORS: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Derbeneva, S. S.;
Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element of the dipole moment of
the electronic transition of the cyan violet band system. III

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 376-385

TOPIC TAGS: cyan, cyan band system, cyan violet band system, dipole
moment, matrix element, integral absorption exponent, internuclear
distance, dissociation energy, electronic transition

ABSTRACT: This is a continuation of previously reported research
(Teplofizika vy*sokikh temperatur v. 1, 73 and 218, 1963) and is
devoted to the actual determination of the square of the matrix ele-
ment of the dipole moment of the electronic transition $|R_e|^2$ from
the measured integral absorption exponents of the rotational line of

Card 1/2

ACCESSION NR: AP4017717

the sequences $\Delta v = 0$ and $\Delta v = -1$ of the violet system of CN bands. The value obtained for the $|R_e|^2$ was found to be 0.38 atomic units and to be independent of the internuclear distance of the transitions. The over-all error in the measurements due to imperfections in the spectral instrument and failure to take complete account of the skirts of the lines is less than 10%, since the half-width of the rotational line exceeds or is equal to the half-width of the apparatus function under the experimental conditions. The value obtained for $|R_e|^2$ is in satisfactory agreement with the values obtained earlier by other methods. A value of 7.6 eV is obtained for the dissociation energy of CN from the present results and those by others. Orig. art. has: 6 figures, 7 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

Card   2/4

KUDRYAVTSEV, Ye. M.; SOBOLEV, N.N.; TUNITSKIY, L.N.; FAYZULLOV, F.S.

Pyrometric study of the state of a gas behind a reflected
shock wave. Trudy Fiz.inst. 18:159-200 '62.   (MIRA 15:12)
       (Pyrometry)   (Shock waves)   (Gas dynamics)

S/0294/63/001/001/0073/0084

ACCESSION NR: AP4000402

AUTHORS: Kudryavtsev, Ye. M.; Ginnius, Ye. F.; Pechenov, A. N.;
Sobolev, N. N.

TITLE: Determination of the matrix element in the dipole moment of
electron transfers in the cyanogen violet spectrum. Part 1

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 1, 1963, 73-84

TOPIC TAGS: cyanogen, carbon monoxide, nitrogen, shock wave, high
temperature, radiative heat transfer, cyanogen spectrum, spectral
line reversal, spectroscopy, supersonic aerodynamics; violet band,
electron transfer, dipole moment, matrix element, absorption spec-
trum, radiative heat exchange, heat exchange, heat transfer, shock
wave heating, shock tube, violet band system, reflected shock wave

ABSTRACT: In view of the uncertainty in the value of $|R_e|^2$ (the
square of the electron transition dipole moment matrix element) for

Card 1/4

ACCESSION NR: AP4000402

the violet cyanogen spectrum, and in view of a recent development of a new method for determining this quantity in the Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR) by measuring the absorption of light in gas behind a reflected shock wave, new measurements of $|R_e|^2$ have been set up by this method, with the CN radicals obtained by heating a mixture of CO and N_2 by a reflected shock wave. It was established that by transmitting pulsed light through a mixture of CO and N_2 heated to 5,000--7,000°K by the reflected shock wave, it is possible to register the absorption spectrum of the violet CN band system, and determine the value of $|R_e|^2$ of this system. To choose the optimal experimental condition and to obtain the data necessary for the data reduction, the states of the CO and N_2 mixture behind the reflected shock wave were calculated over a wide range of initial pressures (10--200 mm Hg) and of shock-wave velocities (2.0--5.6 km/sec). The temperature of the mixture

Card   2/4

ACCESSION NR: AP4000402

was measured by a generalized method of inversion relative to the CN bands, which was also used to monitor the fact that the CN concentration is in equilibrium. The shock tube employed was described by the authors previously (Optika i spektroskopiya, v. 8, 585, 761, 1960). It is concluded that the most suitable conditions for the described experiment are those with $T_5 \geq 4800°K$ (i.e., $p_1 = 100, 50,$ 25 mm Hg). The final results of the experiments will be reported in future articles. "In conclusion the authors are grateful to A. T. Matachun and L. L. Sabsovich for programming and solving the problem with the electronic computer, to A. A. Sapronov for developing the electronic apparatus, and to G. I. Dronova and I. M. Kholinov for help with the work." Orig. art. has: 9 figures, 2 formulas, and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute AN SSSR)

Card 3/4

KAGAN, S.Z.; TRUKHANOV, V.G.; KOSTIN, P.A.; KUDRYAVTSEV, Ye.N.

Extraction of caprolactam from sulfate liquors in rotary disk extractors.
Khim. prom. 41 no.3:184-186 Mr '65.   (MIRA 18:7)

KAGAN, S.Z.; TRUKHANOV, V.G.; KOSTIN, P.A.; KUDRYAVTSEV, Ye.N.

Use of industrial rotary disk extractors for the two-stage
extraction of caprolactame. Khim. prom. no.2:94-101 F '64.
(MIRA 17:9)

KUDRYAVTSEV, YE.N.   2

33438
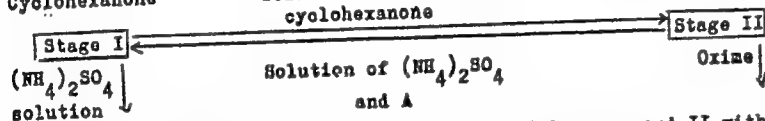S/064/62/000/001/001/008
B110/B138

15.8080

AUTHORS: Kotlyar, I. B., Matveyeva, G. N., Smolyan, Z. S., Fogel',
Ts. I., Gulyakov, V. M., Kudryavtsev, Ye. N.

TITLE: Continuous method of producing cyclohexanone oximes

TEXT: A two-stage, continuous method of oxime production has been
developed. Not only could it be automated, it also produces better
quality oximes, and reduces losses of hydroxylamine hydrosulfate (A):

Cyclohexanone	Solution of oxime in cyclohexanone		Solution of A
Stage I	$\longleftarrow$	$\longrightarrow$	Stage II
$(NH_4)_2SO_4$ solution	Solution of $(NH_4)_2SO_4$ and A		Oxime

Reaction I is conducted with an excess of cyclohexane, and II with an excess
of A. The formation of cyclohexanone oximes follows the reaction

Card 1/2   2

$$2\ \bigcirc^{\cdot O} + (NH_2OH)_2 \cdot H_2SO_4 \longrightarrow 2\ \bigcirc^{=NOH} + H_2SO_4 + H_2O,\ \text{with } H_2SO_4 \text{ being}$$

neutralized by NH_3. Thus, the acidity indicates the stage of oxime
formation. Preliminary experiments were carried out to determine τ, the
contact period which must elapse before the acidity of the reacting mass
becomes constant, and the percentage extraction of A as dependent on its
concentration in the initial sulfate solution. Results: τ = 15 - 20 min;
optimum A concentration ∼20 g/liter. B and the stage II sulfate solution
containing 20 - 25 g/liter of A pass continuously into oximator 1 (Fig. 1)
of stage I. The resulting mixture is passed into 2, where it is
neutralized with gaseous NH_3. The bottom layer in separator 3, spent

sulfate solution, is passed into an evaporator, the upper one (oxime
solution and B) into collector 4, and thence into stage II oximator 5,
where it is mixed with a new A solution. NH_3 is used in the stage II

neutralizer 6. The upper oxime layer in separator 7 passes to the next
stage, and the sulfate solution passes via collector 8 into oximator 1.
A stoichiometric ratio must be preserved between the fresh amounts of B and
A fed into 1 and 5. There are 1 figure and 2 tables.
Card 2/2

KUDRYAVTSEV, Ye.P., inzhener.

Productivity indices of mechanical machining of engines and other piston
machines. Vest.mash. 33 no.11:68-70 N '53.   (MLRA 6:12)
                                 (Gas and oil engines) (Metal cutting)

KUDRYAVTSEV, Ye.P. (Moskva)

Effect of shears and the inertia of rotation on bending vibrations
of elastic rods. Izv.AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr.
no.5:156-159 S-O '60.   (MIRA 13:9)
              (Elastic rods and wires--Vibration)

L 29543-65   EWT(d)/EWT(l)/EWP(m)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/FCS(k)/
EWA(h)/EWA(l)   Pd-1/Pf-4/Peb   EM

ACCESSION NR: AP5005178   S/0179/64/000/006/0113/0116

AUTHOR: Kudryavtsev, Ye. P. (Moscow)

TITLE: On oscillation of an infinitely long elastic cylindrical shell in a moving
compressible gas stream

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 6, 1964, 113-116

TOPIC TAGS: elastic shell, elastic wave, gas flow, inviscid flow, critical velocity
oscillation equation, unstable flow

ABSTRACT: The oscillations of an infinite cylindrical shell in a moving gas stream
enclosed in a coaxial solid cylindrical wall were studied analytically. The gas is
assumed to be in potential flow, and the equations of thin, elastic shell moment
theory are used. The simplified solution of the cylinder oscillations is given by
$\Omega_1^2 - \Omega^2 - \frac{\rho R}{\rho_s h}\alpha(\Omega - kU)^2 = 0$, where Ω = frequency (see Fig. 1 on the Enclosure). The
gas flow perturbation equation is given in cylindrical coordinates with boundary
conditions $\frac{\partial \varphi}{\partial r} = U\frac{\partial w}{\partial z} + \frac{\partial w}{\partial t}$
$|\partial \varphi/\partial r = 0|$. The speed of elastic wave propagation is defined by V, and

Card 1/3

L 29643-65

ACCESSION NR: AP5005178   O

the Mach number M_1 by $||U - V||/c_{\infty_1}$. Expressions are derived for the mass attachment

coefficient α or $\quad \dfrac{1}{\alpha} = \left| -n + vR \dfrac{(\chi vR/n) A_{n-1} + B_n}{(\chi vR/n) T_n + A_n} \right| \quad (M_1 < 1)$

$\dfrac{1}{\alpha} = \left| -n - vR \dfrac{(\chi vR/n) P_{n-1} + Q_n}{(\chi vR/n) H_n + P_n} \right| \quad (M_1 > 1)$.

For large wavelengths, α is given by $\alpha(\mu, n) = \dfrac{\mu R^2}{\rho c_{\infty}^2} \dfrac{h}{R} \dfrac{\Omega_1^2 (1 - \omega_1^2)}{m^2 M_1^2}$. It is shown that for

finite thickness shells and sufficiently large clearances between the shell and the
solid wall, the critical velocity for the onset of instability is given by J. W.

Miles as $M_{*_1} = \dfrac{V_{*_1}}{c_{\infty}} + 1$. Numerical results are obtained for values $0.001 \leqslant \lambda/R \leqslant 0.03$

and for relative radii $0.33 \leqslant \chi \leqslant 0.90; 1.01 \leqslant \chi \leqslant 5$ in gas flow. Orig. art. has: 13
equations and 4 figures.

ASSOCIATION: none

SUBMITTED: 03Jul63   ENCL: 01   SUB CODE: AS,ME

NO REF SOV: 003   OTHER: 001

Card 2/3

L 29543-65

ACCESSION NR: AP5005178

ENCLOSURE: 01

Fig. 1.

Card 3/3

KUDRYAVTSEV, Ye.P.

Laws of electro-osmotic stabilization of clayey soils. Trudy MBI no.28:
100-112 '56.   (MIRA 10:6)
(Soil stabilization)

KUDRYAVTSEV, Ye. P. Cand Tech Sci -- (diss) "Application *"Utilization* of electroösmosis in *the* compression of clayey soils." Mos, 1957. 15 pp 20 om. (Min of Higher Education. Mos Order of Lenin Power Engineering Inst im V. M. Molotov), 100 copies (KL, 7-57,106)

34

KUDRYAVTSEV, Ye.P.

Experimental investigation of clay-soil stabilization by means
of direct electric current. Nauch.dokl.vys.shkoly; energ.
no.3:27-36 '58. (MIRA 12:1)

1. Rekomendovano kafedroy osnovaniy, fundamentov i konstruktsiy
Moskovskogo energeticheskogo instituta.
(Soil stabilization) (Electricity in agriculture)

KUDRYAVTSEV, Ye.P.

Axisymmetrical problem regarding electric stabilization of
clay soils. Nauch.dokl.vys.shkoly; energ. no.2:199-209
'59.   (MIRA 13:1)

1. Rekomendovana kafedroy osnovaniy, fundamentov i konstruktsiy
Moskovskogo energeticheskogo instituta.
          (Soil stabilization)

KUDRYAVTSEV, Ye.P.

Calculation of electric stabilization of clay soils. Nauch.
dokl.vys.shkoly; energ. no.2:211-219 '59.   (MIRA 13:1)

1. Moskovskiy energeticheskiy institut.
            (Soil stabilization)

KUDRIAVTSEV, Yo.P., Lng.Lt?....t..

An industial magnetic control compaction of clayey soils by means of an electric and magnetic field. Izv. vys. ucheb. zav.; geol. i raz. no. 11:117-12 D '60.   (MIRA 14:2)

1. Nеftyanoy ordena Trudovogo Krasnogo Znameni geologorazvedochniy institut. Predstavlena kafedroy inzhenernoy geologii.
(Soil stabilization)

S/879/62/000/000/042/088
D234/D308

AUTHOR: Kudryavtsev, Ye. P. (Moscow)

TITLE: Vibration spectra of elastic plates with rectangular ho-
          rizontal section

SOURCE: Teoriya plastin i obolochek; trudy II Vsesoyuznoy konfe-
          rentsii, L'voy, 15-21 sentyabrya 1961 g. Kiev, Izd-vo
          AN USSR, 1962, 267-269

TEXT: The author considers an isotropic plate having rectangular
ribs along its edges. The rigidity and mass of the ribs are taken
into account. With the aid of V. V. Bolotin's asymptotic method
equations are obtained from which the wave numbers can be deter-
mined. There are 2 figures.

Card 1/1

KUDRYAVTSEV, Ye.P., kand.tekhn.nauk; SHARLOT, A.Ya., inzh.

Mechanical design of dischargers built in the form of a triangular
prism. Elektrotekhnika 35 no.2:57-59 F '64.   (MIRA 17:3)

KUDRYAVTSEV, Ya.P., kand. tekhn. nauk

Using the asymptotic method in investigating natural vibrations of elastic rectangular plates. Rasch.na proch. no.10:352-362 '64.

(MIRA 18:1)

SHCHYAVTSEV, Ye. A. (Moskva)

Vibration of an infinitely long elastic cylindrical shell in a compressible gas flow. Izv. AN SSSR Mekh. i mashinostr. no.6: 113-116 N-D '6l. (MIRA 18:2)

KUDRYAVTSEV, Ye. V.

"Cortical Connections Between Respiration and Muscular Activity." Cand Biol Sci, Inst of Physiology, Acad Sci USSR, Leningrad, 1953. ($R^Z h$ Biol, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

KUDRYAVTSEV, Ye.V., doktor tekhn. nauk, red.; IONOV, V.P., kand. fiz.-
mat. nauk, red.; VISKOVA, M., red.: DOTSENKO, V., tekhn. red.;
IOVLEVA, N., tekhn. red.

[Mobile plasma] Dvizhushchaiasia plazma; sbornik perevodov. Mo-
skva, Izd-vo inostr. lit-ry, 1961. 612 p.   (MIRA 15:1)
                (Plasma (Ionized gases))

KUDRYAVTSEV, Ye, V.

USSR/Engineering - Heat, Ventilation   Aug 51

"Thermal and Hydrodynamic Modeling of Air Motion in
a Large Hall (Volume Model)," Ye. V. Kudryavtsev
Perm Engr Inst. im. Kuybyshev, As USSR

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 8,
pp 1178-1187

Studies stability of "temp overlapping" caused by
heating of upper part of hall with lighting sour-
ces, conditions for origination of circular move-
ment and other problems which can not be solved by
place modeling. Proves sep coexistence of forced
and natural convections, i.e., possibility for
partial ventilation of large industrial premises
and public halls. Describes model and presents its

USSR/Engineering - Heat, Ventilation   Aug 51
                   (Contd)

installation diagram and photographs. Submitted
by Acad Kirpichev 3 May 51.

Dr. Tech. Sci.

205T18

205T18

KUDRYAVTSEV, YE.V.

PA - 2814

AUTHOR KUDRYAVTSEV, YE.V., SHUMAKOV, N.V.,
TITLE Mean Temperature Method for Solid Body Heating Investigation.
(Metod sredney temperatury dlya izucheniya protsessa nagreva
tverdogo tela - Russian)

PERIODICAL Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 4, pp 856-867, (U.S.S.R.)
Received 5/1957   Reviewed 6/1957

ABSTRACT A method for the investigation of a non-steady heat exchange of so-
lid bodies is described. A temperature point is shown to exist which
is very close to the average slab temperature during heating. The prob-
lem of the heating of a flat slab by a heat flow, which changes accor-
ding to time and in accordance with a linear law, is solved. Here the
initial temperature of the disk is parabolically distributed. It is
shown that with the initial temperature of the slab being homogenous
the temperature change of the plane with the coordinate $x' = \dfrac{\sqrt{3}}{3} R$
corresponds to the change of the average slab temperature.
x^* is the coordinate of the average-temperature point. The temperature
value at the point x^* is shown to be equal to the average slab tem-
perature in four cases. It is shown that the method of average tem-
perature can be used for discovering the boundary function. In compari-
son with the method of consecutive intervals it is stated to be possible
immediately to determine at any (but known) point of the disk the tem-
perature distribution according to thickness by means of this method
and immediately to pass on to the boundary function. The method of aver-

Card 1/2

PA - 2814

Mean Temperature Method for Solid Body
Heating Investigation.

age temperature, however, demands a solution of the equations for the
heat conductivity in the case of determined boundary conditions for
the same operations. It is best to combine these two methods. The values
of the boundary function found by means of the first method agree well
with these which were found by the second method.
(With 4 illustrations and 2 citations from Slav publications)

ASSOCIATION   ENIN of the Academy of Science of the USSR (ENIN AN SSSR)
PRESENTED BY
SUBMITTED   31. 1. 1956
AVAILABLE   Library of Congress
Card 2/2

KUDRYAVTSEV, Ye. V.

Name : KUDRYAVTSEV, Ye. V.

Title : Candidate of Technical Sciences

Affiliation : Member, Editorial Board, "Problems of Rocket Technology"

Remarks : N. A. Akkerman, N. I. Biryukov, V. T. Vlasov, V. P. Ionov, Ye. V. Kudryavtsev, B. I. Nazarov, A. A. Orlov, V. A. Popov, and Yu. M. Shaulov are members of the editorial board of the periodical "Problemy Raketnoy Tekhniki" ("Problems of Rocket Technology"), published by the Foreign Literature Publishing House in Moscow. The periodical is a collection of translations and abstracts of foreign scientific articles and monographs.

Source : P: Problemy Raketnoy Tekhniki, No. 1, January 1958, p. 2

8.

KUDRYAVTSEV, Ye.V., doktor tekhn.nauk, red.; IONOV, V.P., kand.fiz.-mat.
nauk, red.; OSOKINA, V.I., red.; RYBKINA, V.P., tekhn.red.

[Problems of high-speed flights] Problemy poleta s bol'shimi
skorostiami; sbornik statei. Moskva, Izd-vo inostr.lit-ry.
1960. 173 p.   (MIRA 14:3)
        (Aerodynamics, Supersonic)

69964
S/170/60/003/01/01/023
B022/B007

24.5500

AUTHORS: Kudryavtsev, Ye. V., Chakalev, K. N.

TITLE: A Universal Electron Calorimeter

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 1, pp. 3 - 9

TEXT: The authors constructed a universal electron calorimeter, which is destined for the simultaneous determination of the actual absolute values of heat capacity, heat conductivity, heat from phase transformations (melting heat), of latent heat, as well as of electrical conductivity within a large temperature range. The main characteristics of the new calorimeter are the improved regulation of the electron current and the removal of secondary-electron emission, as well as its operation under non-steady thermal conditions of the sample. The heated sample in the evacuated electron calorimeter serves as anode from which the cathode, which serves as electron source, is located at a distance of 150 mm (Fig. 3). The heat flow q is proportional to the energy of the electrons, i.e., the current density j. On the basis of this relation all thermo-physical parameters and the electrical conductivity of the sample may be determined. The universal electron calorimeter consists of the calorimeter proper, the electrical measuring instrument, the

Card 1/3

69964

S/170/60/003/01/01/023
B022/B007

A Universal Electron Calorimeter

high-temperature-, and the vacuum apparatus (Fig. 1). The calorimeter body consists of two perpendicular quartz tubes (Fig. 2). The electronic circuit is given (Fig. 3). In the electric circuit an oscilloscope of the type POB-12, loop galvanometers of the types GBSh-3 and GBSh-1, and a voltmeter of the type 134422, class 1, were used for the purpose of measuring the anode current. In the high-temperature part a control potentiometer PP or an oscilloscope of the type POB-12, and in the vacuum part a diffusion oil pump of the type TsVL-100 with a fore pump of the type VN-461 were used. The vacuum was controlled by means of a thermo-vacuometer of the type VT-2 and an ionization manometer of the type VI-3. The theoretical fundamentals of the method were checked by calculations. When calculating the absolute values of the quantities measured on the basis of readings of calorimetric measurements, the following sources of error must be taken into account: 1) Correction for the radiation of the sample. 2) Correction for the error in determining the distance due to fastening the thermocouple. 3) Errors of measuring devices. 4) Other sources of error. As test material, a silver sample with an Ag content of 99.99% was used. The coefficients of heat capacity and heat conductivity of this sample, determined by means of the universal electron calorimeter, are compared with the results obtained by other authors (Tables 1,2). Measurements carried out on porous bronze (Table 3) showed that

Card 2/3

A Universal Electron Calorimeter

69964

S/170/60/003/01/01/023
B022/B007

the results measured by means of the device described are well reproducible.
There are 3 figures, 3 tables, and 11 references, 7 of which are Soviet.

ASSOCIATION: Energeticheskiy institut AN SSSR im. G. M. Krzhizhanovskogo,
g.Moskva (Institute of Power Engineering of the AS USSR, imeni
G. M. Krzhishanovskiy, City of Moscow)

Card 3/3

KUDRYAVTSEV, Ye.V.; CHAKALEV, K.N.

Theory of the all-purpose electronic calorimeter method. Trudy
MIIPP 15:30-40 '60.   (MIRA 16:2)

(Calorimetry)

PHASE I BOOK EXPLOITATION   SOV/5909

Kudryavtsev, Yevgeniy Vasil'yevich, Konstantin Nikolayevich Chakalev, and Nikolay Vasil'yevich Shumakov

Nestatsionarnyy teploobmen (Nonstationary Heat Exchange) Moscow, Izd-vo AN SSSR, 1961. 156 p. Errata printed on the inside of back cover. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Energeticheskiy institut im. G. M. Krzhizhanovskogo.

Resp. Ed.: A. S. Predvoditelev, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G. B. Gorshkov; Tech. Ed.: L. V. Yepifanova.

PURPOSE: This book is intended for specialists interested in heat-exchange problems.

COVERAGE: Methods of investigating the boundary conditions of heating (cooling) in solid bodies are discussed. These methods are free from the restrictions of the regular-regime method and the exponential methods, and are said to have

Card 1/4

Nonstationary Heat Exchange   SOV/5909

been developed by the authors. Particular attention is given to measuring
methods and to the application of established formulas for computing boundary
conditions of nonstationary heat exchange. Stationary and nonstationary heat
regimes are also discussed. The authors thank Engineers L. D. Kalinnikov and
O. I. Luneva. There are 37 references: 31 Soviet, 4 German, 1 English, and
1 Italian.

TABLE OF CONTENTS:

Card 2/4

Nonstationary Heat Exchange

Card 3/4

Nonstationary Heat Exchange   SOV/5909

AVAILABLE: Library of Congress

SUBJECT: Physics

                                                        AD/wrc/gmp
Card 4/4
                                                        3-5-62

AUTHORS: Kudryavtsev, Ye. V., Shumakov, N. V.

TITLE: Effect of Size and Material of a Solid on Nonsteady Heat
             Exchange

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1961, Vol. 4, No. 1,
             pp. 63-70

TEXT: The effect of the size of a body upon its nonsteady heat exchange
was studied by heating it in a water thermostat. The effect produced by
the material of the body was studied in a potential flow, and likewise
cooling was studied in an ice tank. The dependence of the heat flow on
time and on the temperature drop, as well as the dependence of the heat
exchange coefficient on time and on the temperature gradient was determin-
ed for various test pieces. As test pieces, silver pieces with 200, 150,
100, 75, 50, 25, and 12.5 mm radius, cobalt-, copper-, zinc-, and
aluminum-pieces having a radius of 50 mm were used. A relation was intro-
duced between heat flowing to the body and the duration of the process
and the characteristic of the body concerned. It is shown that this

Card 1/2

Effect of Size and Material of a Solid on
Nonsteady Heat Exchange

S/170/61/004/001/010/020
B019/B056

equation is general enough for explaining a nonsteady heat exchange of
various bodies with conditions otherwise being equal. This relation is
derived on the assumption that to various bodies heated under equal con-
ditions, the same quantities of heat are conveyed within certain periods τ,
where the τ are proportional to their thermal capacity. Therefore,
$q\tau$ = idem holds, with $\tau/c_f R$ = idem. The physical nature of this relation
is studied. It is found that the nonsteady nature of the process on both
sides of that plane through which the heat exchange takes place, must be
taken into account. A theoretical calculation may under certain circum-
stances only be carried out by means of computers. V. N. Sokolov is
mentioned. There are 4 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Energeticheskiy institut AN SSSR im. G. M. Krzhizhanovskogo,
               g. Moskva (Institute of Power Engineering of the AS USSR
               imeni G. M. Krzhizhanovskiy, Moscow)

SUBMITTED: July 21, 1960

Card 2/2

39518

24.5200

AUTHORS: Kudryavtsev, E. V. and Shumakov, N. V.

TITLE: Similitude of the non-stationary heat exchange of solid bodies under identical conditions

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 139. 1961. Teoriya podobiya i yeye primeneniye v teplotekhnike; trudy pervoi mezhvuzovskoy konferentsii, 122–130

TEXT: Heat exchange of solid bodies cannot be solved by the theory of similitude, since the boundary conditions of the real process cannot be expressed analytically a priori. An investigation was conducted on cylinders having one heat-exchanging and the remaining thermally insulated surfaces. The experiments establish an equation of non-stationary heat exchange:

$$q(\tau_h) = \text{idem} \quad \text{for} \quad \tau_h/c\rho R = \text{idem} \tag{1}$$

where $q(\tau_h)$ = the value of the heat flux entering the body at the moment τ_h, $c\rho$ = the volume heat capacity of the body substance, R = the determining dimension, and τ_h is called the "time of similar heat content". The following consequences are drawn from this formula for different bodies heated under identical con-

Card 1/2

Similitude of the non-stationary...

S/649/61/000/139/010/018
I028/I228

ditions: a) the variations of the mean integral temperatures of the bodies, taken at times of similar heat content, are equal; b) the variations of the surface temperatures of the bodies, taken at times of similar heat content, are equal; c) the ratio of the heat contents of two bodies, taken at times of similar heat content, is equal to the ratio $(c\rho R)_A/(c\rho R)_B$; d) at the same temperature head, different heat fluxes enter the different bodies; e) the dependence of the heat flux on the temperature head is the same for different bodies, provided their thremal resistances R/γ are equal. There are 4 figures.

ASSOCIATION: Energeticheskiy institut AN SSSR (Institute of Energetics, AS USSR)

Card 2/2

KUDRYAVTSEV, Ye.V., master apparatnogo tsekha

Condenser protection of type EKG-60/20 main controllers.
Elek. i tepl. tiaga 7 no.10:15-16 O '63.   (MIRA 16:11)

1. Depo Krasnoyarsk Vostochno-Sibirskoy dorogi.

39517

S/649/61/000/139/011/018
I028/I238

2 4. 5.200

AUTHOR: Kudryavtsev, E. V. and Chakalev, K. N.

TITLE: A calorimetric method of testing the determination of boundary conditions in non-stationary heat exchange

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 139. 1961. Teoriya podobiya i yeye primeneniye v teplotekhnike; trudy pervoi mezhvuzovskoy konferentsii, 131-134

TEXT: The paper describes a universal electronic calorimeter for measuring the radiant heating of solid bodies. A cylindrically-shaped specimen serves as an anode, heated by means of bombarding electrons from a glowing cathode. The heat flow q, which can be varied, is given by the formula

$$q = 0.86 \, jU \tag{1}$$

where $j = i/S =$ the density of the electron current on the bombarded surface, $V =$ the anode tension. The initial temperature t_0 of the specimen is established by means of an electric heater. Temperatures $t(\tau)$ ($\tau =$ the time) during the experiment are measured at two different points by thermocouples, and recorded on

Card 1/2

A calorimetric method...

an oscillograph, together with the current and tension. The heat flow q is determined by means of (1). This permits us to determine empirically the relationship $t(x,\tau) - t_0 = f(q)$, which agrees well with the theoretical one, obtained by the method of successive intervals (which splits the time τ into a series of intervals, in each of which the heat flow is assumed to be constant). There are 2 figures.

ASSOCIATION: Energeticheskiy institut AN SSSR (Institute of Energetics, AS USSR)

Card 2/2

KUDRYAVTSEV, Ye. V.; CHAKALEV, K. N.; LUNEVA, O. I.

Standards for heat flow measurement. Teplo- i massoper. 1:
140-145 '62.   (MIRA 16:1)

1. Energeticheskiy institut im. G. M. Krzhizhanovskogo.

(Calorimetry)

L 35844-66   EWT(1)   JAJ/WW

ACC NR: AP6014983   SOURCE CODE: UR/0170/66/010/005/0573/0576

AUTHOR: Kudryavtsev, Ye. V.; Turchin, I. A.   43

                                                                                B

ORG: Institute of Construction Physics, Moscow (Institut stroitel'noy fiziki)

TITLE: The dependence of unsteady-state heat transfer on the heat flux density

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 10, no. 5, 1966, 573-576

TOPIC TAGS: convective heat transfer, heat flux, hydrodynamics

ABSTRACT: The basic element of the experimental apparatus was a Nichrome ribbon with dimensions $157 \times 20 \times 7 \times 10^{-3}$ mm. The ribbon was stretched between two copper prisms which served to lead in the current, and was placed in the field of a Type IZK-454 interferometer, along a vertical plane. Thus, the hydrodynamic process was determined by natural convection on both sides of the ribbon. Into the circuit were connected electrolytic condensers with a capacitance of 5000 microfarads, which served as accumulators of energy, and a variable resistance which made it possible to regulate the rate of discharge of the condensers and, consequently, the rate of change of the thermal stress. The charge on

Card 1/2   UDC: 536.25

L 35814-66

ACC NR: AP6014983

the condensers was created from a 220 volt alternating circuit through
two D-207 diodes connected in series and a 12 ohm resistance coil.
During the experiments, measurements were made of the air temperature,
and the current strength and voltage at the ends of the ribbon, the
changes of which were recorded in a Type N-105 oscillograph with
simultaneous photography. Experimental results are shown in a series of
curves and photos. Of particular interest is a figure showing
interferograms of the Nichrome ribbon for three different heating
conditions, after the passage of an equal period of time, 0.417 sec,
after the current was turned on. It is evident from the photo that the
temperature of the surface of the ribbon and the distribution of the
temperature in the boundary layer at the end of the stated interval of
time are different. The highest surface temperature (49°C) corresponds
to a maximum rate of heating the ribbon, and vice versa. Orig. art.
has: 4 figures.

SUB CODE: 20/ SUBM DATE: 20Dec65/ ORIG REF: 002

Card 2/2

KUDRYAVTSEV, Ye.Ye., marksheyder; IVANOV, L.I., marksheyder.

Effect of mining operations upon the forest area of the Moscow Coal Basin. Ugol' 29 no.1:33-35 Ja '54. (MLRA 7:1)

1. Tul'skaya oblastnaya GGTI (for Kudryavtsev). 2. Trest Skuratovugol' (for Ivanov).
(Moscow Basin--Coal mines and mining) (Coal mines and mining--Moscow Basin) (Moscow Basin--Forests and forestry)
(Forests and forestry--Moscow Basin)

KUDRYAVTSEV, Yu.

Measurements in the adjustment of low-frequency amplifiers. Radio
no.11:53-54 N '63.   (MIRA 16:12)

KUDRYAVTSEV, Yu., inzh.

Stereophonic low-frequency amplifier. Radio no.1:44-47 Ja '64.
(MIRA 17:8)

14(1)   SOV/67-59-2-11/18
AUTHOR: Kudryavtsev, Yu. A., Engineer

TITLE: Improvement of the System of Protecting the Engines Driven by
               Compressed Gas DVD-2 and DVD-4 From Overspeeding (Uluchsheniye
               sistemy zashchity detanderov DVD-2 i DVD-4 ot razgona)

PERIODICAL: Kislorod, 1959, Nr 2, pp 46-47 (USSR)

ABSTRACT: Air expansion in the piston engines DVD-2 and DVD-4 is used
               for driving an asynchronous alternator which supplies the
               generated electric energy to the system. A V-belt is employed
               as transmission. In this combination (engine driven by compress-
               ed gas - alternator), however, frequently occur drawbacks and
               breakdowns of the engine driven by compressed gas due to
               overspeeding. This may occur, for instance, by burning of a
               fuse, cable break, etc, when the alternator is disconnected. An
               electric circuit was designed for the purpose of protecting
               the afore-mentioned engines from overspeeding, though even
               this device did not exclude any drawbacks. Figure 1 contains
               the electric circuit that was designed first by the VNIIKIMASh
               for the purpose of protecting the piston engines DVD-2 and
               DVD-4 of the plants KG-300-2D and KT-1000 from being oversped.
               The two drawbacks which occurred in spite of the afore-said

Card 1/2

Improvement of the System of Protecting the Engines   SOV/67-59-2-11/18
Driven by Compressed Gas DVD-2 and DVD-4 From Overspeeding

protection consisted in a burning of the fuse of the relays
due to the fact that the air-intake valve had been too widely
opened, and in a cable break due to excessive vibration. The
breaking mechanism did not respond. In order to overcome these
disturbances, the selenium rectifier was directly connected
to the circuit of the alternator so that a drawback in the
supply system could not entail disturbances any longer. Yet
even this measure is to be submitted to further investigations
so as to ensure safe operation of the machine driven by com-
pressed gas. There are 2 figures.

Card 2/2

SOV/67-59-3-9/27

14(1)
AUTHOR: Kudryavtsev, Yu. A., Engineer

TITLE: Improved Construction of the Nitrogen Electric Pre-heater
              (Uluchshennaya konstruktsiya elektropodogrevatelya azota)

PERIODICAL: Kislorod, 1959, Nr 3, pp 38 - 39 (USSR)

ABSTRACT: In the oxygen plants of the type KG-300-2D aluminum oxide
              adsorption dryers are used for high-pressure air. The regene-
              ration of the adsorption dryers is carried out by means of
              preheated nitrogen obtained by the fractionation column.
              The heating elements used for the heating of nitrogen have
              hitherto been applied in such a way that an oxide layer
              forming during the heating soiled the heating spirals which
              easily led to the burning through of the spirals. Besides,
              also the metal cylinder of the heating element easily burnt
              through. In the new construction which is now being used
              in the oxygen station of the Magnitogorskiy Metallurgical
              Kombinat a chamotte cylinder was applied around the heating
              element which prevents both the burning through of the cylin-
              der as well as the pollution of the heating spiral (Fig 2).

Card 1/2

Improved Construction of the Nitrogen Electric
Pre-heater   SOV/67-59-3-9/27

This new pre-heater is in continuous operation already
since 2 years. There are 2 figures.

Card 2/2

ACC NR: AT6029241   SOURCE CODE: UR/0000/66/000/000/0333/0340

AUTHOR: Kudryavtsev, Yu. A.

ORG: none

TITLE: Solution of a problem in nonlinear programming on a combination computer

SOURCE: Vsesoyuznaya konferentsiya-seminar po teorii i metodam matematicheskogo model-
irovaniya. 4th, Kiev, 1964. Vychislitel'naya tekhnika v upravlenii (Computer technolo-
gy in control engineering); trudy konferentsii. Moscow, Izd-vo Nauka, 1966, 333-340

TOPIC TAGS: linear programming, nonlinear programming, special purpose computer, air-
craft cargo handling

ABSTRACT: The calculation of the location of the center of gravity and the mode of
loading a passenger aircraft involves a large number of variables, including weight and
the abscissa of the center of gravity of an empty aircraft; the number of crew members
and the mean abscissa of their location; the number of rows of passenger seats, and
the abscissas of their centers of gravity; the weight of the cargo; the number of car-
go holds, their maximum capacities and abscissas, etc. The calculation of the center
of gravity location was reduced to a mixed set of linear inequalities and equations.
The set may have no solutions, or have a unique solution, or a multiplicity of solu-
tions. For the case of a multiplicity of solutions, a criterion of selecting an opti-

Card 1/2

ACC NR: AT6029241

mum solution was obtained; it amounts to the minimization of an expression, which is the sought function, with certain restrictions. The obtained expression is the absolute value of the difference between a variable sum and some constant. Thus, the characteristics of the sought function makes it possible to reduce a problem of nonlinear programming to a problem of linear programming. The linear programming is done in two steps: 1) a maximization of the sought function, or of the linear form, and 2) a minimization of the linear form with certain restrictions and boundary conditions, respectively. Ultimately, the problem is solved by modeling, or ordered sorting, or various loading variants until the desired location of the center of gravity is obtained. An extensive comparison of the suggested method of ordered sorting with a number of generalized methods of mathematical programming indicates that both the number of operations and the number of addresses is considerably smaller with this method. Thus, the fictitious game method requires 745×100^{60} operations, whereas ordered sorting requires only 33,905 operations to arrive at the same solution. General purpose computers do not lend themselves well to this purpose. It appears desirable to use a specialized computer comprised of a digital computer and an analog or digital simulator.

Orig. art. has: 3 tables, 10 formulas.

SUB CODE: 09,01/   SUBM DATE: 12Feb66

Card 2/2

KUDRYAVTSEV, Yu.A.

Use of electric generators for controlling the refrigerating
capacity of expanders in oxygen plants. Prom.energ. 16 no.10:
10-12 O '61.   (MIRA 14:10)

(Oxygen)

L 12960-65   EWT(m)/EPF(m)-2/EWP(t)/EWP(b)   Po-4   JD/JG
ACCESSION NR: AR4044206   S/0137/64/000/006/G030/G030

SOURCE: Ref. zh. Metallurgiya, Abs. 6G192

AUTHOR: Kudryavtsev, Yu. D.; Golubchik, Ye. M.; Smirnov, V. A.   β

TITLE: Electrolytic production of chromium-molybdenum alloy

CITED SOURCE: Tr. Novocherk. politekhn. in-ta, v. 146, 1963(1964), 41-46

TOPIC TAGS: electrolytic production, chromium based alloy, molybdenum containing
alloy

TRANSLATION: For production of Cr-Mo-alloy (containing 10-11% Mo) there is recom-
mended the electrolytic composition (in g/l), CrO_3 - 250, MoO_4 - 80, H_2SO_4 - 2.5,
at D_k = 40 a/dm^2 and a temperature of 45-50°, the current efficiency is 11-12%.

SUB CODE: MM   ENCL: 00

Card 1/1

KUDRYAVTSEV, Yuriy Georgiyevich; MELAMED, Vladimir Ionovich,kand.tekhn.nauk;
MEL'NIKOV, Andrey Sergeyevich; KUTUKOV, V.F., inzh., retsenzent; ,
ROZENTSVEYG, V.D., inzh., retsenzent; KUNIN, N.F., doktor fiz.- mat.
nauk, red.; DUGINA, N.A., tekhn. red.

[Production and use of ceramic articles in the machinery industry]
Proizvodstvo i primenenie mineralokeramicheskikh izdelii v ma-
shinostroenii. Pod red. N.F.Kunina i V.I.Melameda. Moskva, Mash-
giz, 1962. 157 p.   (MIRA 15:10)
       (Machinery industry)   (Ceramics)

15-57-5-6843

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5,
p 160 (USSR)

AUTHOR: Kudryavtsev, Yu. I.

TITLE: The Plane Inverse Problem in Geophysics (Poloskaya
obratnaya zadacha geofiziki)

PERIODICAL: Uch. zap. LGU, 1956, Nr 210, pp 83-92.

ABSTRACT: Existing formulas for determining the depth to the
center of mass generating a field and, in particular,
the method of A. P. Kazanskiy, give a completely inad-
missible error at the expense of an error in measuring
the normal field. The author derives a new formula
for determining the depth to the center of mass
generating a potential field. The method of determin-
ing the depth, as proposed by the author, insures that
errors in determining the normal field will but slightly
affect the value of depth obtained. In many cases,
according to such a procedure, it is possible to obtain
a value for depth with an error not exceeding 20 per-
Card 1/2   cent. A formula is given for determining depth in

15-57-5-6843

The Plane Inverse Problem in Geophysics (Cont.)

the case when the magnetic field is similar in nature to the gravi-
tational field. The last paragraph of the paper attempts to give an
approximate determination of the lower semi-field, inasmuch as this
problem is directly related to the determination of depth to the
center of mass which is the source of the field.
Card 2/2

A. M. L.

KUDRYAVTSEV, YU. I.

"The Two-Dimensional Inverse Problem of Geophysics," an Article in Scientific Notes of the Leningrad Order of Lenin State University imeni A. A. Zhdanov, No. 210, Physics Institute, Physical Science Series, No. 9, Geophysics, 1956, 190 pp.

SUM: 1360

9(6)

AUTHORS: Kudryavtsev, Yu. I., Novikov, P. I.   SOV/64-59-1-21/24

TITLE: Determining the Concentration of Potassium in Potassium
Minerals by the Gamma Method (Opredeleniye kontsentratsii
kaliya v kaliynoy rude s pomoshch'yu gamma-metoda)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 1, pp 88-89 (USSR)

ABSTRACT: Instead of the time-consuming chemical method, the gamma
determination based on natural γ-radiation of potassium
may be used to control the content of potassium. The "B"-plant,
fed by way of the alternating-current rectifier ST-200, was
used as a recorder in the present case. The mineral sample
was placed into an aluminum cylinder which was contained in
a larger aluminum cylinder in a cast-iron vessel. 20 VS-9
counters were installed in the space between the two alu-
minum cylinders. The positive pole of the high voltage was
earthed, and the negative pole was connected with the counter
cathodes. The negative impulses were conducted to the lamp
BGS. It is pointed out that the average density of the sample
affects the number of impulses. The following should be con-
sidered in measurements: 1) The content of other radioactive
elements, 2) The time of measurement (at least 30 minutes

Card 1/2

SOV/64-59-1-21/24

Determining the Concentration of Potassium in Potassium Minerals by the Gamma Method

at about 15% K), 3) The content of potassium is determined without taking into account the humidity of the sample, and 4) The device should be adjusted once a month and checked daily. There is 1 figure.

Card 2/2

KUDRYAVTSEV, Yu. I.

Some problems in the thoery of induction logging. Prikl. geofiz.
no.28:101-115 '60. (MIRA 14:3)
(Oil well logging, Electric)

KUDRYAVTSEV, Yu.I.

The frequency method of measurement in magnetic susceptibility
logging. Uch. zap. LGU no.286:87-98 '60.   (MIRA 14:3)
                    (Magnetic prospecting)

KAZAKOV, N.I., gornyy tekhnik; YUNOVICH, M.I., gornyy inzh.;
        KUDRYAVTSEV, Yu.I., gornyy inzh.; SMOLDYREV, A.Ye.,
        kand.tekhn.nauk; MARKOV, Yu.A., gornyy inzh.; KURBATOV, A.K.,
        gornyy inzh.

Study of the operation of a hydraulic hoist in the "Belkina-
Ventilyatsionnaya" Mine. Gor. zhur. no.6:43-47 Je '62.
                                        (MIRA 15:11)
1. Leninogorskoye shakhtostroyupravleniye (for Kazakov).
2. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnoy
metallurgii, Ust'-Kamenogorsk (for Yunovich, Kudryavtsev).
3. Institut gornogo dela im. Skochinskogo, Moskva (for
Smoldyrev, Markov, Kurbatov).
    (Leninogorsk region (East Kazakhstan Province)--Mine hoisting)

KUDRYAVTSEV, Yu.I.; MEYYER, V.A.

Interpretation of logging diagrams of magnetic susceptibility.
Uch. zap. LGU   no.320:134-161   '63.   (MIRA 16:9)
                        (Magnetic prospecting)

L 27250-66   EWP(j)/EWP(k)/EWT(d)/EWT(m)/EWP(h)/ETC(m)-6/T/EWP(1)/EWP(e)/EWP(v)/
ACC NR: AP6009866   EWP(t)   RM/WH/   SOURCE CODE: UR/0413/66/000/004/0060/0060
                                WW/JD/HM

AUTHOR: Kudryavtsev, Yu. I.

ORG: none

TITLE: Device for soldering metal with glass. Class 32, No. 178958

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 60

TOPIC TAGS: glass to metal seal, gas filter

ABSTRACT: This Author Certificate presents a device for soldering metal with glass in a protective gas medium. The device includes an inductor, a soldering container, and a gas scrubbing container (see Fig. 1). To improve the quality of the soldered joint and to decrease the size of the device, the soldering container and the gas scrubbing container are made with perforated bottoms and are placed one above the other.
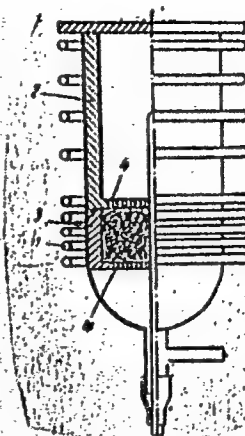
Card 1/2   UDC: 666.1.037.5:621.792.3/.6

L 27250-66
ACC NR: AP6009866

Fig. 1.   1 - inductor; 2 - soldering container;
          3 - gas scrubbing container;
          4 - perforated bottoms.

Orig. art. has: 1 diagram.
 SUB CODE: 11, 13/ SUBM DATE: 19Nov64
Card 2/2 CW

86324

2209

15.8114   also 1144,1160

S/190/60/002/012/011/019
B017/B078

AUTHORS: Korshak, V. V., Sladkov, A. M., Kudryavtsev, Yu. P.

TITLE: Synthesis of Acetylide Polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 12,
            pp. 1824 - 1827

TEXT: The electrophysical properties of acetylide polymers have been
studied by means of spectra of electron paramagnetic resonance. The produc-
tion of acetylide polymers of bivalent copper from acetylene and diethynyl
benzene is described in detail. The spectra of the electron paramagnetic
resonance of polyacetylides from β-diethynyl benzene and acetylene are
shown in a figure. The electron paramagnetic resonance of copper polyacety-
lide is particularly strong. The epr spectra were evaluated by N. N. Bubnov.
There are 1 figure and 8 references: 5 Soviet, 1 US, 1 British, and
1 French.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute
            of Organometallic Compounds of the Academy of Sciences USSR)

Card 1/2

Synthesis of Acetylide Polymers

86324

S/190/60/002/012/011/019
B017/B078

SUBMITTED: May 21, 1960

X

Card 2/2

5.3700

AUTHORS: Nesmeyanov, A. N., Nogina, O. V., Berlin, A. M.,
             Kudryavtsev, Yu. P.

TITLE: Chemical Transformations of Dialkoxy Titanium Oxides

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
             1960, No. 7, pp. 1206-1214

TEXT: The authors describe the chemical properties of dialkoxy titanium
oxides. They continued the investigation of deposition to the $>Ti = O$ bond,
studied the etherification reactions, and found the substitution of alkoxyls
by halogens as well as a substitution reaction of the oxygen bound to ti-
tanium with two chlorine atoms. They obtained the first compounds of a
hitherto unknown series of titanium-containing organic compounds, i.e.,
ethoxy-, n-propoxy-, and n-butoxy titanium oxide chlorides. By the action
of chlorine on di-n-propoxy- and diisobutoxy titanium oxides, they produced
the compounds $Cl_2 TiO \cdot 2n-C_3H_7OH$ and $Cl_2 TiO \cdot 2i-C_4H_9OH$. On the reaction of
dialkyl dichloro silanes with dialkoxy titanium oxides, the following ex-
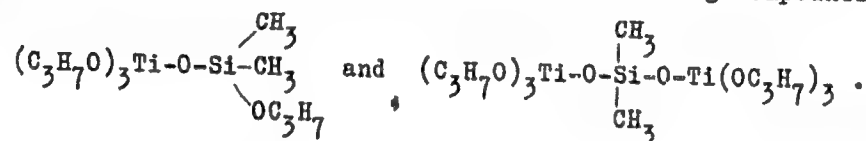change of oxygen with two chlorine atoms takes place:

Card 1/2

Chemical Transformations of Dialkoxy Titanium Oxides

82101
S/062/60/000/07/04/007
B015/B054

$(n-C_3H_7O)_2TiO + Cl_2SiR_2 \longrightarrow (n-C_3H_7O)_2TiCl_2 + \left[OSiR_2\right]_x$. A similar reaction takes place by the action of tetra-n-propoxy silane on the compound $Cl_2TiO \cdot 2n-C_3H_7OH$, namely $Cl_2TiO \cdot 2n-C_3H_7OH + (C_3H_7O)_4Si \rightarrow Cl_2Ti(OC_3H_7)_2 \cdot n-C_3H_7OH + n-C_3H_7OH + \left[OSi(OC_3H_7-n)_2\right]_x$. By the linkage of dimethyl di-n-propoxy silane with di-n-propoxy titanium oxide, the following compounds were obtained:

$$(C_3H_7O)_3Ti-O-Si\begin{array}{l} {}^{\diagup CH_3} \\ -CH_3 \\ {}^{\diagdown OC_3H_7} \end{array} \quad \text{and} \quad (C_3H_7O)_3Ti-O-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{Si}}-O-Ti(OC_3H_7)_3 \; .$$

There are 8 references: 7 Soviet and 1 British.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: January 23, 1959

Card 2/2

20638

45.9207   2209 abo 1045, 1145, 1138   S/020/61/136/006/014/024
H.2210   B103/B203

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, Kasatochkin, V. I,
                Sladkov, A. M., Kudryavtsev, Yu. P., and Usenbayev, K.

TITLE: Synthesis and properties of polyacetylene

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 6, 1961, 1342-1344

TEXT: The authors produced polyacetylene (PA) and studied its chemical
structure and physical properties. They assumed that PA formed in the
oxidation of bis-acetylene acetylenides of the type $HC \equiv C - (CH_2)_n - C \equiv CH$
which are said to be among the polymeric products not yet studied. They
had already suggested a formation mechanism of PA in Ref. 3. In the present
investigation, they produced the required acetylenide by passing acetylene
through the ammoniacal solution of a salt of bivalent copper. Subsequently,
the acetylenide was oxidized by an aqueous solution of potassium ferri-
cyanide at boiling temperature. The authors assumed that the resulting
black powder (containing 98% of C) was a mixture of polymer homologs of
polyacetylene. On the basis of the temperature-dependent weight losses

Card 1/2

(Fig. 1) and the electron paramagnetic resonance, they conclude that this product is a polymer with cumulene structure, probably $H-(C{=}C{=}C{=}C)_n-H$.

PA showed high heat resistance, being transformed into graphite only at $2300^\circ C$. Below $2300^\circ C$, the carbon in PA remains in the form of polyacetylene. conclude that the PA sample investigated is an n-type semiconductor. The copper atoms imbedded in the molecular carbon chain with polyallene structure play the role of the electron donor. This is confirmed by the fact that the α of PA samples which were produced with the use of stronger copper-free oxidizers (nitrate ion, H_2O_2) is equal to zero. The change of the sign of α (near zero at 1300 and $1500^\circ C \pm$ above 1500 up to $2300^\circ C$ corresponds to the transition of the PA sample to a p-type semiconductor. The authors think that this is coupled with the thermal dissociation and the separation of copper- and hydrogen atoms from the carbon chain, and is certainly connected with the acceptor properties of the terminal C atoms. There are 3 figures, 1 table, and 3 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels of the Academy of Sciences USSR) Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences USSR)

Card 2/2

S/020/62/144/001/016/024
B119/B144

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, Sladkov, A. M.,
             and Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of 2,6-dimethyl-3,5-diethinyl
             pyridine and 9,10-diethinyl-9,10-dihydroxy-9,10-dihydro-
             anthracene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 115 - 117

TEXT: The authors checked their assumption that the reaction

$$n \; HC \equiv C - R - C \equiv CH \xrightarrow[Cu^+]{O_2} \left[C \equiv C - R - C \equiv C \right]_n$$ must lead to soluble products
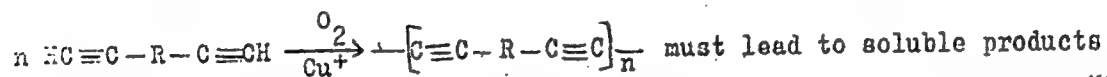
(1) if it takes place in the presence of compounds containing only one $HC \equiv C$
group (lower molecular weight by early chain rupture; (2) if it proceeds
with compounds where R is a large hydrocarbon group, or (3) if R represents
a polar group. The compounds mentioned in the title were condensed alone,
and also in the presence of acetylene, p-diethinyl benzene, phenyl acetylene,
propargyl alcohol, and 2-methyl-5-ethinyl pyridine. The structure of the

Card 1/2

Oxidative dehydropolycondensation...

S/020/62/144/001/016/024
B119/B144

condensation products was determined from their infrared spectra. Products consisting of a soluble and an insoluble fraction of identical structure were obtained in all cases. The epr spectra taken for some condensation products showed equal concentration of individual electrons in the soluble and insoluble fractions. The highest number of individual electrons ($\sim 2.2 \cdot 10^{17}$ at a signal width of 7.2 oe) was found in the condensation product of 9,10-diethinyl dihydroxy dihydroanthracene with acetylene. There is 1 table. The most important English-language reference is: A. Hay, J. org. Chem., 25, 1275 (1960).

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 16, 1962

Card 2/2
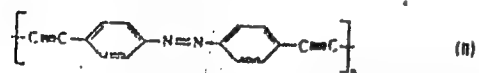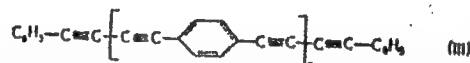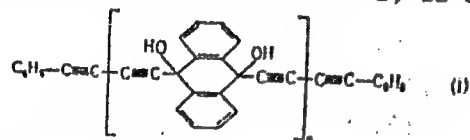
S/020/62/144/004/019/024
B101/B138

AUTHORS: Myl'nikov, V. S., Sladkov, A. M., Kudryavtsev, Yu. P.,
Luneva, L. K., Korshak, V. V., Corresponding Member AS USSR,
and Terenin, A. N., Academician

TITLE: Photo-semiconductor properties of acetylene polymers

TEXT: Data for the polyacetylenes I - VIII are reported from the labora-
tory directed by A. N. Terenin where research on photosensitive polymers
has long been proceeding. The compounds were synthesized in the laboratory
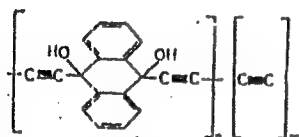directed by V. V. Korshak. I, II and III were very photosensitive in

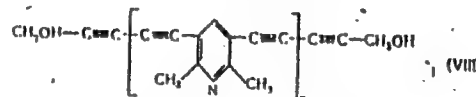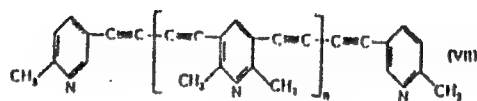Card 1/3

Photo-semiconductor properties...

$\{C\equiv C\}_s$ (V)

(VI)

(VIII)

(VIII)

modulated light (10 mv/mw at 300 cps). IV, V and VI were less photo-
sensitive; VII and VIII showed no photo-emf. In I - IV the conductivity
was of p type, in V and VI it was of n type. I and II were examined more
closely. Results: (1) The spectral distribution of photo-emf showed a
reduction in this effect at 200 → 600 mμ with a narrow selective peak of
exciton type   at λ = 480 mμ in the case of I and a wide peak in this range
for II.   (2) Preliminary illumination of II for 2 hr in ultraviolet light
from an СбД-120 (SVD-120) mercury lamp increased its photo-emf by one order
of magnitude. The long-wave threshold of activation is at 366 mμ and the
405 mμ line is inactive. (3) Preliminary illumination is more effective
in vacuo than in air. The photo-emf of I increases during the first

Card 2/3

Photo-semiconductor properties ...   S/020/62/144/004/019/024
                                                      B101/B138

3 - 5 min lighting, then slowly decreases, but after approx. 1 hr regains
its initial value. After 1 - 2 hr storage in the dark this process is
repeatable. (4) If II is activated by UV light in vacuo the admission of
air immediately reduces its photo-emf to 1/2 - 1/3. This effect is also
repeatable. These results are explained by the UV light ionizing the con-
jugated molecules so that positively charged local centers are formed
which act as electron traps. The photoelectron is retained in the polymer
structure according to E. C. Lim, G. W. Swenson (J. Chem. Phys., 36, no. 1,
118 (1962)). The absorption of light permits the origination of an exciton
which migrates between the molecules and disintegrates on a defect pro-
duced by the UV light to form a mobile hole and an electron trapped by the
defect. Accordingly it should be possible to synthesize photosensitive
polymers. There are 3 figures.

SUBMITTED: April 20, 1962

Card 3/3

KASATOCHKIN, V.I.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; SMUTKINA, Z.S.;
KHRENKOVA, T.M.; KORSHAK, V.V.

Properties of polyacetylenes. Izv. AN SSSR Ser.khim. no.10:1766-1771
O '63.
(MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut
goryuchikh iskopayemykh.

KORSHAK, V.V.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; MAKHSUMOV, A.G.

Synthesis of polyesters containing acetylenic bonds in the chain.
Izv. AN SSSR Ser.khim. no.10:1852-1853 O '63.   (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 18044-63   EWP(j)/EPF(c)/EWT(m)/BDS   ASD   Pc-4/Pr-4   RM/WW/MAY
ACCESSION NR: AP3001145   S/0190/63/005/006/0793/0798

AUTHORS: Korshak, V. V.; Sladkov, A. M.; Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of p-diethinylbenzene

SOURCE: Vysokomolekulyarny*ye soyedineniya, v. 5, no. 6, 1963, 793-798

TOPIC TAGS: oxidative condensation, copolycondensation, dehydropolycondensation,
diethinylbenzene, acetylene

ABSTRACT: Earlier studies by the authors on dehydropolycondensation of
p-diethinylbenzene by oxidation with potassium ferricyanide in the presence of
cuprous chloride induced the present investigation, where oxygen of the air,
hydrogen peroxide, and ammonium persulfate were added to the list of oxidizers.
For copolymeryzation studies, acetylene, phenylacetylene, and ethylacetylene
were used in conjunction with p-diethinylbenzene. The oxidative dehydropoly-
condensation of p-diethinylbenzene by air was conducted in a pyridine solution
in the presence of cuprous chloride, through which air was bubbled for 1.5 hours,
resulting in the formation of a yellow precipitate. The obtained substance was
subjected to elementary analysis and to infrared spectroscopy, which showed

Card 1/2

L 18044-63
ACCESSION NR: AP3001145

absorption bands in the 3300 and 1250 cm^{-1} regions, which are characteristic for $\equiv$C-H bonds, while the 2200 cm^{-1} band is indicative of the C$\equiv$C bond. The appearance of other characteristic bands indicated the presence of phenyl nuclei along the polymeric chain. The oxidative copolymerization of diethinylbenzene with acetylene, phenylacetylene and ethylacetylene yielded low molecular ether-soluble compounds with the first two instances, and an insoluble product with ethylacetylene. Orig. art. has: 4 formulas and 5 charts.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR (Institute of Elementoorganic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 14Oct61   DATE ACQ: 01Jul63   ENCL: 00

SUB CODE: CH   NO REF SOV: 003   OTHER: 002

Card 2/2

L 11143-63
Pr-4/Pt-4--RM/WW/MAY   EWP(j)/EPF(c)/EWT(m)/BDS/ES(s)-2--AFFTC/ASD/ESD-3/SSD--Pc-4/
ACCESSION NR: AP3001448

AUTHOR: Sladkov, A. M.; Kudryavtsev, Yu. P.

TITLE: Polyacetylenes

SOURCE: Uspekhi khimii, v. 32, no. 5, 1963, 509-538

TOPIC TAGS: synthesis of polyacetylenes, properties of polyacetylenes, macro-
cyclic compounds, dehydrocondensation

ABSTRACT: The original article gives a summary of the synthesis and properties of
polyacetylenes, macrocyclic compounds with conjugated acetylenic bonds, and the
synthesis of polyacetylenes by an oxidizing dehydropolycondensation of bis-acety-
lenes. The polyacetylenes presently synthesized have as many as 10 conjugated
triple bond molecules. The natural polyacetylenic compounds are not discussed.
The basic methods which make the synthesis of a large variety of polyacetylenic
hydrocarbons were developed by K. Glaser, P. Cadiot and W. Chodkiewiez, and E. R.
H. Jones. These methods are represented as shown in the enclosure. Butadiene-1,3
(diacetylene), one of the simplest compounds, was first prepared through oxidation
of acetylenide with CuCl, and later with KMnO sub 4. It was found that water so-
lutions of Ca(OH) sub 2 and K sub 2 CO sub 3 when used in the reaction give yields
as high as 60 percent. Diacetylene is quite unstable and can be stored only at
Card 1/4

L 11143-63
ACCESSION NR: AP3001448

6

temperatures lower than -25C. When the second acetylenic bond is introduced into an acid molecule the dissociation constant increases. A noticeable amount of diacetylene glycol was found in all the reactions. A number of explanations are given for the mechanism of the oxidized dehydrocondensation. Klebanskiy with his co-workers believe that the formation of diacetylenic compounds in aqueous solutions proceed by an ionic radical mechanism. Triacetylenes which are very unstable even at -50C and diphenyltriacetylenes which are quite stable in comparison to aliphatic triacetylenes were also synthesized by various methods. The synthesis of octatetrayne-1,3,5,7 (tetraacetylene), decapentayne-1,3,5,7,9 (penta-acetylene), dodecahexayne-1,3,5,7,11 (hexa-acetylene), tetradecaheptayne-1,3,5,7,9,11,13 (hepta-acetylene), hexadecaoctatetrayne-1,3,5,7,9,12,13,15 (octa-acetylene), and eicosadecayne-1,3,5,7,9,11,13,15,17,19 (deca-acetylene) by various methods and authors are given in detail. The stability of the above acetylenes decreases with the increase of acetylenic groups in the polyacetylene chain. Their stability increase with the substitution of the end hydrogen with alkyl or aryl radicals, and the size and configuration of the radical. Due to their specific reaction ability, the acetylynic hydrocarbons have a special place in organic chemistry. The electron structure of the acetylenic bond differs from the ethylene bond by the fact that Sigma bond is formed from 2 sp hybrid orbits. Nucleophylic reaction capability of acetylenic bond and the oxidation of acetylenic hydrogen is explained by

Card 2/5

L 11143-63

ACCESSION NR: AP3001448

the asymmetric electronic distribution. A detailed description of the mechanisms and products is given covering the following reactions: hydrogen substitution; nucleophylic additions with CH_3OH, HCN, ROH, $CH(COOR)_2$, CH_3Li and H_2O, $(Alh_4)^-$ and H_2O, and the formation of cis- and trans isomers; electrophylic additions; radical reactions; catalytic hydration; and formation of cumulines (mesomeric structures) from poly-ynes. This paper also presents the synthesis of a series of macrocyclic compounds with conjugated acetylenic bonds obtained through oxidation with oxygen or oxygen with CuCl, or other oxidizers. The cyclic compounds are in the form of dimers, trimers tetramers, pentamers, hexamers, and even higher cyclic acetylenes. It was noted that in order to avoid the formation of a linear polymer the reaction must take place in a homogeneous solution. One of the best solutions was found to be pyridine and methanol mixture. The synthesis of polyacetylenes from bis-acetylenes by the oxidizing dehydropolycondensation was also studied. The oxident used in these reactions was oxygen which was used in conjunction with mono- or di- valent copper. Additional oxidation of the reaction mixture was attained with $K_3Fe(CN)_6$ which resulted in the formation of poly-yne hydrocarbons. It must be noted that the use of strong oxidants such as $HClO_4$ results in the formation of coalescent structures. Dehydropolycondensation of acetylene with 9,10-diethynyl-9,10-dioxi-9,10-dihydroanthracene gives a soluble product. Oxidative dimerization of monopyridy-

Card 3/54

L 11143-63
ACCESSION NR: AP3001448

2

lacetylenes forms dipyridylpolyacetylenes. It was discovered that some synthesized polyacetylenes have a high photoelectric sensitivity[16] in the modulated light. This discovery points to the approach of the possibility of synthesizing photosensitive polymers. Orig. art. has: 4 tables, 1 graph, and 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy akademii nauk SSSR (Institute of Organo-Elemental Compounds, Academy of Sciences SSSR)

SUBMITTED: 00   DATE ACQD: 12Jun63   ENCL: 01

SUB CODE: 00   NO REF SOV: 020   OTHER: 067

Card 4/4

KASATOCHKIN, V.I.; SLADKOV, A.M.; ASEYEV, Yu.G.; KUDRYAVTSEV, Yu.P.;
YEGOROVA, O.I.; KORSHAK, V.V.

Infrared spectra of polyynes. Dokl. AN SSSR 153 no.2:346-349
N '63.
                                                    (MIRA 16:12)

1. Institut goryuchikh iskopayemykh AN SSSR i Institut
elementoorganicheskikh soyedineniy AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Korshak).

KUDRYAVTSEV, Yu.P.; SLADKOV, A.M.; KORSHAK, V.V.

Oxidizing polydehydrocondensation of p-diethynylbenzene and
acetylene in the presence of p-substituted phenylacetylenes.
Izv. AN SSSR. Ser. khim. no.10:1908 O '64.   (MIRA 17:12)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

SLADKOV, A.M., kand. khim. nauk; KUDRYAVTSEV, Yu.P.

Is a third form of carbon possible? Priroda 53 no.5:88-94
'64.   (MIRA 17:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR,
Moskva.

ACCESSION NR: AP4034542   S/0020/64/155/005/1140/1143

AUTHOR: Sladkov, A. M.; Korshak, V. V. (Corresponding member); Kudryavtsev, Yu.
P.; Makhsumov, A. G.

TITLE: Synthesis of polyethers containing triple bonds in the chain.

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1140-1143

TOPIC TAGS: polyether, synthesis, triple bond polyether, monopropargyl ether
copolymer, dipropargyl ether copolymer, diethynylbenzene copolymer, unsaturated
ether, electrophysical property, photoelectromotive force, conjugated polyene, IR
spectra, acid polydehydrocondensation, conjugated triple bond , acetylenec ether ·
polymer

ABSTRACT: Polyethers based on the acid condensation products of mono- and
dipropargyl ethers with p-diethynylbenzene (DEB) were synthesized and their
properties, especially their electrophysical properties, were studied. DEB was ·
condensed under acid conditions with the dipropargyl ethers of 4,4-dihydroxydi-
phenyl, of 4,4-dihydroxydiphenyl-ol-2-propane, and of hexafluoro-2,2-bis-(4-
hydroxyphenyl)-propane, and the propargyl ethers of phenol, quinizarin and benzoic

Card 1/2

ACCESSION NR: AP4034542

acid. These unsaturated ethers were selected because their certain electro-physical properties, such as photoelectromotive force. The characteristic for conjugated polyenes were absent in these polymers. It was hoped that incorporating DEB in the chain of the polyether molecule would change its electrophysical properties. IR spectra of the products obtained showed the characteristic of the absorption bands for the acid polydehydrocondensation of DEB were preserved. From IR data and elementary analysis it is concluded that the generally insoluble polymers contained conjugated triple bonds alternated with the ether groups. "IR spectra were obtained in the INEOS AN SSSR laboratory by N. A. Chumayevsk, whom the authors sincerely thank." Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 29Oct63   DATE ACQ: 13May64   ENCL: 00

SUB CODE: OC   NO REF SOV: 004   OTHER: 000

Card 2/2